

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN F. HOPE

Appeal No. 95-5125
Application No. 07/891,300¹

ON BRIEF

Before HANLON, PAK and LIEBERMAN, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 4, 8, 9, 13 through 18, 23 through 25, 33

¹ Application for patent filed May 29, 1992. According to appellant, this application is a continuation-in-part of Application No. 07/767,466 filed September 30, 1991, now abandoned; which is a continuation-in-part of Application No. 07/572,253 filed August 27, 1990, now abandoned.

Appeal No. 95-5125
Application No. 07/891,300

through 35, 37 through 39 and 41. See final rejection, dated February 10, 1994, Paper No. 5, and the Notice of appeal dated August 5, 1994, Paper No. 10. One amendment was filed on April 26, 1994, Paper No. 7 after the final rejection, which amendment was not entered. See the advisory action, dated May 13, 1994, Paper No. 8. Allowed claims 7, 19 through 21, 36, 40 and 42 and "objected to" claims 5, 10, 11, 22 and 26 through 31 appear in the appendix of claims, but are not before us for decision.

THE INVENTION

Appellant's invention is directed to a polymeric solid state electrolyte for electrochemical devices containing a triflate salt, and polyethylene oxide combined with a cosolvent, containing an ether as a required component of the solvent. Solidification of the polyelectrolyte is accomplished by the presence of the triflate salt and by partial evaporation of the ether solvent component.

THE CLAIM

Appeal No. 95-5125
Application No. 07/891,300

Claim 34 is illustrative of appellant's invention and is reproduced below.

34. A polymeric solid state electrolyte for batteries, capacitors and other electrochemical devices wherein the electrolyte contains an alkali metal or alkaline earth metal triflate salt and polyethylene oxide, compounded with a co-solvent of an ester and an ether, in which solidification of the electrolyte is accomplished by the presence of the triflate salt and by partial evaporation of the ether component.

THE REFERENCE OF RECORD

As evidence of obviousness, the examiner relies upon the following reference of record.

Cheshire et al. (Cheshire) 5,001,023 Mar. 19,
1991

THE REJECTION

Claims 4, 8, 9, 13 through 18, 23 through 25, 33 through 35, 37 through 39 and 41 stand rejected under 35 U.S.C. § 103 as unpatentable over Cheshire.

OPINION

Appeal No. 95-5125
Application No. 07/891,300

Appellant submits that the claims on appeal do not stand or fall together. In contrast to appellant's position, our decision is based upon issues, which in our analysis, are common to and shared by each of the claims before us. We will therefore confine our discussion to claim 34.

We have carefully considered all of the arguments advanced by appellants and the examiner with respect to the (rejection under 35 U.S.C. § 103). We shall not sustain the examiner's rejection.

During patent prosecution, claims are to be given their broadest reasonable interpretation consistent with the specification, and the claim language is to be read in view of the specification as it would be interpreted by one of ordinary skill in the art. See In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983); In re Okuzawa, 537 F.2d 545, 548, 190 USPQ 464, 466 (CCPA 1976).

Each of appellant's claims require the presence of "polyethylene oxide." As understood by those of ordinary skill in the art polyethylene oxide contains multiple linear - $(\text{CH}_2\text{-CH}_2\text{-O-})_n$ repeating units, which constitutes the general

structure of ethylene oxide homopolymers. Polyethylene oxide is defined in the art as a high molecular weight homopolymer of ethylene oxide.^{2,3} Based upon the above considerations we determine polyethylene oxide to be a linear high molecular weight homopolymer having repeating ethoxy units of the structure

$-(\text{CH}_2-\text{CH}_2-\text{O})_n-$. By definition, a linear polymer is necessarily free of side chains and crosslinking. Stated otherwise, the introduction of side chains would necessarily require the introduction of a unit other than an ethoxy moiety. Similarly, crosslinking would likewise require the introduction of an additional chemical moiety capable of crosslinking or the use of an external agent such as a free radical initiator or radiation, both of which necessarily alter the polyethylene oxide structure set forth above.

Moreover, our interpretation is consistent with appellant's characterization of polyethylene oxide. They have

² Encyclopedia of Polymer Science and Engineering, volume 6, page 226, lines 4-7 and 27-30, page 246, lines 1-3, John Wiley & Sons, New York, 1985.

³ Poly(ethylene Oxide), page 1, lines 1-3, page 2, lines 1-2, Academic Press, New York, 1976.

asserted in their specification (page 2), "(W)hile the prior art disclosures may incorporate lithium triflate, they crosslink the polymer for solidification of the electrolyte, which does not occur in the present invention." Polyethylene oxide being the only polymer present in appellant's invention, it clearly is the uncrosslinked polymeric component referred to by appellant supra. Moreover, appellant has himself argued that polyethylene oxide is uncrosslinked and without side chains. See Brief, page 16 wherein appellant states, "no cross-linking with main and side chains is present." We find that appellant's statement in the Brief supra necessarily refers to polyethylene oxide.

Appellant has further expressly stated, "(T)he polyethylene oxide is without side chains." See Brief, pages 5 and 14. He has also argued that the reference relied upon by the examiner does not contain, "pure polyethylene oxide." See the amendment, page 7, Paper No. 3, dated July 2, 1993. We find each of the appellant's statements consistent with our definition of polyethylene oxide supra.

These findings are dispositive of the appeal before us. Cheshire, the sole reference of record relied upon by the

Appeal No. 95-5125
Application No. 07/891,300

examiner requires the presence of a polymer, "having side chains linked to the main chains." See column 1, lines 37-38. The polymers are preferably crosslinked between C-C atoms in the main chain or pendant functionalities in the side chains. See column 1, line 35 through column 2, line 64. These definitions necessarily preclude the presence of polyethylene oxide, as understood by those of ordinary skill in the art, from being among those polymers disclosed by Cheshire's for his polyelectrolyte. Nor do we find any teachings in Cheshire that can be construed as suggesting the presence of polyethylene oxide.

For the above reasons, we conclude that the examiner has not carried his burden of establishing a prima facie case of obviousness of the invention recited in any of appellant's claims. Consequently, we do not sustain the rejection under 35 U.S.C. § 103.

Appeal No. 95-5125
Application No. 07/891,300

DECISION

The rejection of claims 4, 8, 9, 13 through 18, 23
through 25, 33 through 35, 37 through 39 and 41 is reversed.

REVERSED

ADRIENE LEPIANE HANLON)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
CHUNG K. PAK)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
PAUL LIEBERMAN)	
Administrative Patent Judge)	

bae

Appeal No. 95-5125
Application No. 07/891,300

Zachary T. Wobensmith III
86 The Commons at Valley Forge East
1288 Valley Forge Road
P.O. Box 750
Valley Forge, PA 19482-0750